

CLAIMS

1. A field grading material consisting of a polymeric matrix provided with a filler, characterized in that the filler comprises a field grading effective amount of particles having at least one dimension smaller than or equal to 100 nm.
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2. A field grading material according to claim 1, characterized in that the filler comprises a field grading effective amount of particles having one dimension between 2-80 nm, preferably 5-50 nm and most preferably 5-30 nm.
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3. A field grading material according to claim 1 or 2, characterized in that said particles are of any semiconducting material having an energy bandgap larger than 0 eV and smaller than 5 eV, preferably ZnO or SiC.
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4. A field grading material according to claim 1 or 2, characterized in that said particles are of any material where the bulk has a dielectric constant at infinitely high frequencies of at least 5, preferably Al₂O₃, TiO₂ or BaTiO₃.
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5. A field grading material according to any of the preceding claims, characterized in that said particles are particles having an aspect ratio of more than 1, preferably of more than 5 and most preferably of more than 10.
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6. A field grading material according to claim 5, characterized in that the particles having an aspect ratio of more than 1, preferably of more than 5 and most preferably of more than 10, are randomly oriented in the matrix.
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7. A field grading material according to claim 5, characterized in that the particles having an aspect ratio of more than 1, preferably of more than 5 and most preferably of more than
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10, are oriented in essentially the same direction in the matrix.

5 8. A field grading material according to any of claims 5-7, characterized in that said particles having an aspect ratio of more than 1, preferably of more than 5 and most preferably of more than 10, are provided in the form of fibres, fibrils, whiskers, flakes, ellipsoids or tubes.

10 9. A field grading material according to any of the preceding claims, characterized in that said particles constitute less than 40% by volume, preferably less than 30% by volume and most preferably less than 20% by volume of the field grading material.

15 10. A field grading material according to any of the preceding claims, characterized in that the matrix essentially consists of rubber, thermoplastics or thermoplastic elastomer.

20 11. A field grading material according to claim 10, characterized in that the matrix essentially consists of polyolefin rubber or thermoplastic polyolefin elastomer/plastomer, preferably including EPDM (Ethylene Propylene Diene Monomer) rubber or silicone rubber, or of crystalline thermoplastics, preferably
25 polyethylene.

12. A device for grading an electric field in high-voltage applications, characterized in that the device comprises a field grading material according to any of claims 1-11.

30 13. A method for grading an electric field at a joint or termination of an electric power cable, characterized in that a body of a field grading material according to any of claims 1-11 is introduced in the cable joint or cable termination.

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